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Electricity makes us healthy

- The Popularization of electrotherapy in Japan

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1. Japan's Love affair with Electrotherapy Appliances

Japanese consumers are spending 121.8 billion yen (\$105.9 million) a year on home medical appliances. Various companies produce such appliances as electro massager, electrostimulator, electromagnetic appliance, low frequency therapy appliance, and so forth. For example, in 1998, consumers bought 1.8 million electro massagers worth more than 47.7 billion yen¹. It is probably not going to far to say that there is at least one electrotherapy appliance in almost every Japanese home.

Along with this rise in popularity come many troubles involving these home medical appliances. For instance, in 2002 a dealer who sold non-approved electrotherapy appliances to mainly old people and earned 100 million yen was arrested. Despite the popularity and the problems, the history of these devices has been little studied. As I will describe below, electrotherapy took root among the public in the 1920s through the 30s. Three social conditions at that time, (in addition to the progress of medical science), sustained popularization of electrotherapy. In this report, I shall explore the process of the popularization of electrotherapy by analyzing these social conditions.

2. A Prehistory of Electrotherapy

Let me first briefly summarize the prehistory of electrotherapy until the 1920s. Electrotherapy was introduced to Japan from Europe in the middle of the 18th century, and at first, an electrotherapy appliance was often called *Elekiteru* (エレキテル). *Komodan* (紅毛談) (1765) by Goto Toshiharu is the first publication which wrote about it. Goto explained that *Elekiteru* could remove 'fire' from the diseased part and mitigate all pain. ('Fire' apparently refers to static electricity).

Hiraga Gen'nai read *Komodan* and became interested in *Elekiteru*. In

1770, he obtained a broken *Elekiteru* in Nagasaki, which was brought by the Dutch, and tried to repair it. He succeeded in finally repairing in 1776 and then made his own *Elekiteru* (fig.1). By the end of the 18th century, many people imitated *Elekiteru* or imported them from Holland. Yet, at this time *Elekiteru* was often seemed a kind of curious magic box coming from the West rather than a medical appliance.² *Elekiteru* was one of the first steps for pioneers to learn Western science and technology.

The text *Naifukudoko* (内服同功), written by Japanese doctors, talked about many different kinds of therapies. In the text the author explained not only that *Elekiteru* used static electricity but also discussed other types of appliances which used electricity from galvanic cells. The text also said both of them could cure many kinds of diseases: rheumatism, paralysis, convulsion, insanity, being deaf-mute and others. Sakuma Shozan who was quite interested in engineering produced an appliance which used galvanic electricity in 1860. He too noted the illnesses it could cure in a letter to his friend: paralysis, deaf-mute, hernia, cholera, asthma, impotence, cataract, etc. However, although there are many books that discussed *Elekiteru* and electrotherapy which were written in the middle of the 19th century, most of them treated *Elekiteru* as an instrument of electric experiments. Most Japanese doctors were more eager to learn clinical internal medicine and surgery.

With the coming of the Meiji era (1868-), the Japanese government invited foreign doctors for medical education. Records show a few cases that some foreign doctors taught electrotherapy to Japanese students. In those days, however, the cult of electrotherapy had already passed its prime in Europe. Therefore, these future students were not very enthusiastic either. At that time, electrotherapy gradually lost its reputation for having magical power to cure every disease.

For example, in 1898, an English doctor, known only from the newspaper accounts as Dr. Richard, held an open demonstration of electrotherapy at a theater. He announced the experiment in newspapers and the admission fee was free, so many people came, including a few doctors. In front of the public, Dr. Richard applied his treatment to a blind girl, who insisted that she became able to see everything after his electrotherapy. The experiment, evoked severe criticism of Dr. Richard among Japanese doctors. Because of problems with the method of the experiment, they could not accept the result. This episode marks a turning point for electrotherapy. By the end of the 19th century most of doctors already did not accept electrotherapy as effective for blindness.

When physiotherapy was introduced to Japan, electrotherapy was considered one of its techniques. A clinic of physiotherapy was established in the department of medicine of Tokyo Imperial University in 1916, where electro massage therapy and electro bath therapy were practiced³. The new concept of physiotherapy helped Japanese doctors to think of electrotherapy as an auxiliary treatment, rather than regarding electricity itself as curing diseases. At the same time electrotherapy as a cure-all gradually became popular among the public, and some home appliances appeared on the market in the 1910s. Many kinds of ads of electrotherapy appliances such as 'diathermy' and 'codahealer' began appearing in newspapers in the 1920s to the 30s (fig.2). How did electrotherapy draw the public interest? The remainder of the paper addresses this question by considering three major social conditions behind the dramatic rise in popularity.

3. Development of Electrical Technology and Power Generation

In order to practice electrotherapy at home, individual homes need electric power and it wasn't until the 1920s that Japanese power companies could supply enough electricity both for industry and for home. During WW I, the Japanese government and power companies constructed huge hydraulic power plants all over Japan to supply the demands of the war effort. After the end of the war power companies had plenty of electricity but not enough customers. Many power companies were confronted with bankruptcy unless they found new customers, so they quickly began to supply electricity to homes. The result was a dramatic increase in the number of home with connection to the electricity supply. The coverage went up from 32% of all homes in 1914 to 70% in 1922.

To encourage consumption of electricity in homes, the power companies also tried to familiarize people with household appliances. Until then, most Japanese home had only a light, and because most household appliances on the market were imported from Western companies and were extremely expensive they were very rare. After WW I, however, Japanese engineering companies used their wartime production experience to go into production of cheaper domestic household appliances: electric irons, electric fans, electric stoves, electric heaters, radios, and so forth. Many new engineering companies sprang up, and some of them invented strange appliances which are now unknown. Included among those products were electrotherapy appliances, which were often developed by engineers without medical qualifications who were adapting technology developed for household appliances in the design of electrotherapy appliances (fig.3).

At the same time, the Japanese government recommended a national movement to improve everyday life. The government aspired to catch up the advanced countries and keenly realized the necessity of changing Japanese lifestyles to become more modern and civilized like America. Electrical appliances were the most fascinating symbol of modern life; anything with the phrase 'electro' was regarded as modern, civilized and scientific. The government often used the slogan, "Electricity is a fruit of civilization" and promoted electrification of homes in the same way as the power companies and the engineering companies. Simply because electrotherapy used electricity, it appealed to the public's love of modern devices.

The 1920s was a time when electricity and electrical appliances stimulated desire and imagination of the public more than ever. In addition, this desire was supported by economic and national interests. Among the upper-middle class, who could afford household appliances, electrotherapy appliances were accepted as one of normal household appliances.

4. The Fusion of Traditional Medicine and Electrotherapy

In many cases, advertisements for electrotherapy appliances compared electrotherapy to traditional medicine such as massage, acupuncture and moxibustion. These advertisements helped to overcome the fear about using electricity in therapy which people felt because of stories of electric shocks which were heard as usage of electric appliances spread. The rhetoric that fused electrotherapy and traditional medicine made it easier for the public to accept this strange therapy.

Now, I will describe the kinds of electrotherapy appliances that were produced. We can roughly classify the typical appliances into two groups; the first group consists of devices that apply electricity to traditional medicine: an electro massager, an electro moxibustion appliance, or an electric bath. For example, the electro massager was novel in that it used an electric motor, but massage itself was well-known and traditional therapy. The selling point of an electro massager was that it was 'more effective', 'deeper' and 'faster' than massage by hands. The ads insisted that it could effectively cure many diseases and symptoms because an electro massager can easily reach the deep point of your body where cannot be usually massaged by hands.

The second group consisted instruments to electrify the inner body of a patient, and sometimes to give a prick. These appliances were actually completely

new and different from traditional medicine, but when the ads for these appliances explained the method of therapy, they often referred to acupuncture and moxibustion. In the case of diathermy, a patient needed to apply the two electrodes to his body, and the points of body to receive the electricity (通電点) differed for each disease and symptom. For example there were points for indigestion, points for neurasthenia, a point for sterility, and so forth. These numerous electrified points on the body, were simply associated with therapeutic point and channels and vessels. Most companies sold their appliances with their own original manual explaining the electrified points for each disease. Of course, there was not necessarily any evidence that these points were correct from the therapeutic viewpoint.

When *Elekiteru* was introduced to Japan, the Japanese doctors and engineers generally compared electric current and electrodes with *qi* (気) and *yinyang* (陰陽). They transformed and translated Western science and technology in the context of their own culture, and a cultural translation was going on in many other fields at this time in Japan. Although electrotherapy made the most of the essential ideas of massage, acupuncture and moxibustion, it didn't completely identify with those practices and attempted to gain an ascendancy over other therapies because of its scientific and modern appearance. Electrotherapy held much appeal for the public because it included both the newest technology and the traditional medicine.

In addition to that, it is important to note that electrotherapy spotted a niche where the dominant Western medicine was not effective: chronic disease and incurable disease such as rheumatism, impotence, indigestion, etc. Electrotherapy didn't compete against Western medicine in areas where medicine and surgery were very successful and were succeeding in expanding its influence. This relationship between Western medicine and electrotherapy was similar to the coexistence between Western medicine and traditional medicine. In summary, while electrotherapy seemed scientific and distinguished itself from traditional medicine, it also kept its distance from Western science. Electrotherapy positioned itself on the margin between Western medicine and traditional medicine, and such ambiguity was the reason why it could thrive in the popular culture.

5: Diversification of Occupation and Birth of Electrotherapist

Because of the wartime special procurement boom, the farm population moved into the cities, greatly increasing the number of workers in cities during WW

I. Because of the deep recession after the war, there were many unemployed people and in 1921, the Japanese government established the first employment bureau in Tokyo. After that, many public and private employment agency and vocational schools started up in cities throughout the country. All of these changes created opportunities for new occupations to be created, and both employed and unemployed looked for new kinds of jobs, hoping to improve their chance of success.

As I mentioned above, various ads of electrotherapy appliances appeared on newspaper in the 1920s and the 1930s. Those ads included not only product ads but also ads for vocational schools or institutes to train electrotherapist (電気医療士／電療士). These kinds of ads usually called themselves a school, a clinic and a shop.

Here, let me give an example of electrotherapist school: Tokyo Electrotherapy Institute (東京電気治療法研究所, fig.4). According to its newspaper ad of 1929, this institute had a two month-program to train electrotherapist. Everyone could enter the program without examination, and the students learned several subjects such as 'electrotheralogy'(電療学)and 'electrodiagnosy' (電気治療診断学) and how to operate electrotherapy appliances. The ad also said that after finishing the program the students would be able to open their own clinic and earn as much money as a doctor. Of course, in order to open their own clinic, they had to buy an electrotherapy appliance at the institute that they were associated with.

There were many ads for other electrotherapist school, including the Japan Electrotherapy Medical School (大日本電医学校), and the Tokyo Acupuncture, Moxibustion and Electrotherapy Medical School (東京針灸電療医学校). Unfortunately, there are no documents about these schools because at first there was no clear government authorities for them. So it is not at all clear how many vocational schools of electrotherapist existed and how many electrotherapists worked in the 1920 through the 30s. The Central Sanitary Bureau of the Department of the Interior licensed medical practitioner like doctors and acupuncturists and regulated their practice, but there was no category for a newcomer like an electrotherapist. The Department of Communication or the Department of Commerce and Industry, which had some knowledge of electricity, also did not have the right to license such practices.

As might be expected, there were many troubles concerning the electrotherapy clinics and electrotherapist in the middle of the 20s to the beginning of the 30s. Newspaper articles reported cases when a patient got worse after electrotherapy, cases where a dealer sold a useless appliance by fraud, and so forth. In 1930 the Metropolitan Police Department made rules and began regulation of

medical services by non-medical practitioners in Tokyo. Finally, the Department of the Interior revised the Medical Practitioners' Law, and in 1933 it ordered non-doctors to receive permission before opening a clinic. Control and regulation of electrotherapists and electrotherapy clinics gradually became more strict. Nevertheless an article on Asahi Newspaper in 19th, April, 1935 reported that there were more than ten thousand electrotherapists in Japan. From reports like these it is apparent that the number of electrotherapists and electrotherapy clinics continued to increase though the 20s and the 30s.

Even though there were some harmful effects, it is clear from the popularity of vocational schools for electrotherapist and the enactment of regulation that electrotherapy was widely accepted. Statistical evidence is not available, but the sign for the 'electrotherapist' was a common sight in the cities. Because becoming an electrotherapist needed neither troublesome procedures nor a qualification, many people thought of the electrotherapy clinic as a new business chance. Electrotherapy seemed very modern and scientific so that it was also considered most suitable job for the new age. Because of the creation of the new occupation of electrotherapist, the practice of electrotherapy became an accepted part in Japanese society.

Electrotherapy grew rapidly in popularity under these favorable conditions, but it just as rapidly fell from favor in the end of the 1930s. Japan entered a new war footing and favored the munitions industry instead private and civic life. The Japanese government began to severely restrain the electricity supply for individual homes as well as the production of home electric appliances from 1938. Under this state control of resources, electrotherapy quickly disappeared.

6. Discussion

Popularization of electrotherapy owed more to the current of social and economical changes than to the progress of medical science. The development of electric industry enabled technologically production of electrotherapy appliances, and the birth of the profession of electrotherapist also gave the public more opportunities to access electrotherapy. It is clear from this example that when a new therapy becomes popular among the public the way of sales, marketing, and distribution is an important factor in appealing to the public.

On the other hand, the case of electrotherapy also suggests alternative perspectives beyond the usual 'medical practitioner and patient' perspective. Were those who received electrotherapy or bought electrotherapy appliances patients or

consumers? Was the electrotherapist a medical practitioner or a businessman? Electrotherapy and its appliance were medical instrument to effect a cure but they were also symbols of modern urban living. Even though electrotherapy was medically questionable, it had an undeniable power in popular culture. Our choice of a particular kind of cure is one side of our cultural practice, and the patient who is the subject of producing a new culture by a choice of his/her own cure is not merely the passive recipient of medical services.

Another cultural aspect of popularization of a new medical instrument is how the public integrates the new instrument into the existing culture. The public lacks detailed knowledge about medicine and science, so when it accepts a strange cure and its instrument, it needs to interpret them in the context of familiar and well-known things. In ads for electrotherapy appliances, electrotherapy often was presented as similar to traditional medicine. Electrotherapy used this ambiguity to appeal to the public as being modern and fashionable, but at the same time being a part of familiar culture and tradition. Such cultural interpretation makes the existing culture and tradition gradually change as well as produces a new culture.

In summary, a social approach to popularization of electrotherapy leads us to find the formation of popular culture in which processes of circulation, subjectivity and interpretation combined. If sociology and history of medicine can join together to study medical treatment as an aspect of popular culture, I am sure that we will be able to tackle issues such as electrotherapy from several different perspectives and carry out successful research very soon.

Endonotes

¹ The Ministry of Health, Labor and Welfare. 1998. *Annual Reports on the Medical Industry*. Tokyo: 246

² Kikuchi, Toshihiko. 1988. "Kaisetsu" (Comment). *Edo koten kagaku sosyo* (Classic Library of Science of the Edo Era). Vol. 11. Tokyo: Kowa shuppan.

³ Manabe, Kihachiro and Tawara, Shizuo. 1918. *Butsuriteki ryoho zusetu* (An Illustration of Physiotherapy). Tokyo: Zikken ihosha.

The authors belonged to the clinic of physiotherapy of Tokyo Imperial University and described some kinds of electrotherapy which they practiced in this book.

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